

Digital Elevation Models Created from Stereo ASTER Data

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The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) on NASA's Terra platform acquires stereo images of the surface using nadir and backward looking telescopes. Data are obtained with a base-to-height ratio of 0.6 in the 0.76-0.86 micrometer wavelength region. Images cover about 60 by 60 km with a spatial resolution of 15 m. A digital stereo correlation approach is used to calculate the parallax differences and derive digital elevation models (DEMs) from ASTER stereo pairs. DEM accuracies are 15-30 m for relative DEMs made without ground control points (GCPs); with accurate GCPs, RMSE_{xyz} accuracies are 7-30 m. In this presentation examples will be shown of derived DEMs with analyses of accuracies. Applications of DEMs for various applications will be presented.

Oral Presentation

Key Words: DEM, stereo imagery

Biography:

Michael Abrams received his degrees from the California Institute of Technology in 1970 and 1973. Since joining the Jet Propulsion Laboratory in 1973, he has concentrated on applications of remote sensing to geologic studies. His work has included studies related to mineral exploration, ocean crust formation and alteration, and evaluation of new aircraft and satellite instruments. Currently he is involved in volcano hazards investigations in Mexico and Italy; he is the Associate Team Leader for the EOS ASTER instrument.